Compact Elliptical Slot Millimeter-Wave MIMO Antenna for 5G Applications

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Aims and scope →

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Abstract

This study introduces a novel, highly compact broadband millimeter-wave (mm-wave) antenna design and its Multiple-Input-Multiple-Output (MIMO) configuration proposed for 28 GHz applications targeting 5G networks. The antenna is designed over a 0.25 mm thick Rogers RT5880LZ substrate having a relative dielectric permittivity of 2 and an overall size of 16 mm × 16 mm. Its MIMO configuration utilizes polarization diversity and includes four elliptical-slot radiators integrated with microstrip-line structures, specifically optimized for 28 GHz operation. The performance of the proposed mm-wave MIMO configuration is validated through simulation of its S-parameters using CST software and measurements obtained with a vector network analyzer (VNA). The proposed antenna demonstrates excellent S-parameter performance, achieving a